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CLINICAL REPORT

Pulmonary embolism following thrombosis of the brachial vein after shoulder arthroscopy. A case report

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KEYWORDS

Arthroscopy;
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Summary Thromboembolic complications are very rare after arthroscopic surgery of the shoulder. We report the case of a 25-year-old who presented thrombophlebitis of the brachial vein complicated by pulmonary embolism following arthroscopic surgery for posterior instability of the shoulder. No hemostasis impairment was found in this patient. The factors arguing in favor of thrombosis that had been retained from the literature were the lateral decubitus position with traction of the limb in its axis, prolonged surgical time, use of interscalene brachial plexus block, and a general condition susceptible to thrombosis (personal or family history of thromboembolism, genetic risk factor for thrombosis, smoking, obesity, neoplasia). There are currently no guidelines on the need for thromboembolism prevention during shoulder arthroscopy.

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Introduction

Whether in knee or shoulder surgery, arthroscopic techniques allow therapeutic acts that respect the soft tissues surrounding the joints. Although the thromboembolic complications are beginning to be well documented in prosthetic surgery of the shoulder in the elderly subject [1,2] and in arthroscopic surgery of the knee [3], thromboembolic complications in the young subject following

shoulder arthroscopy remain isolated events [4–7]. In this context, the occurrence of pulmonary embolism is extremely rare [5]. We report the case of a 25-year-old man who, after arthroscopy of the shoulder, presented thrombophlebitis of the ipsilateral upper limb complicated by pulmonary embolism.

Observation

This 25-year-old patient was operated on arthroscopically in our department in January 2006 for posterior instability of the shoulder. This patient was a student who played rugby and skied at a national competitive level. He presented a history of moderate tobacco intoxication but no other personal or family history of venous thromboembolism.

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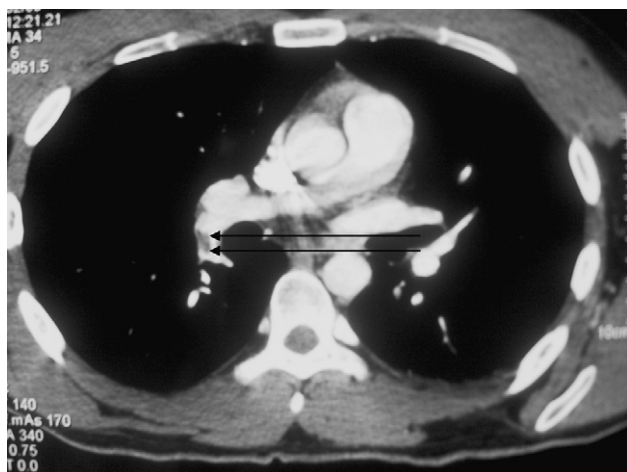


Figure 1 Pulmonary angiographic scan illustrating the thrombus obstructing the right pulmonary artery.

The surgery was performed under general anesthesia, with no locoregional anesthesia. As was the systematic practice in our department at that time, the patient was installed in the lateral decubitus position with 3 kg of traction to disengage the right glenohumeral joint.

The procedure consisted in a posterior capsuloplasty for posterior instability. The operation lasted 150 minutes, long for this type of intervention. In the immediate postoperative period, the patient presented no clinical neurovascular lesions and he was immobilized for lateral rotation with a Dujarier bandage for 6 weeks. The patient was discharged on day 2. On day 10 after the operation, the patient presented basilar-thoracic pain associated with bloody sputum. He was admitted to another hospital in the area where he was convalescing. A chest X-ray demonstrated left pleural effusion and a left triangular opacity compatible with the diagnosis of pulmonary embolism. This diagnosis was confirmed with an angiography scan (Fig. 1) showing bilateral multifocal pulmonary embolism. Venous echo-Doppler of the lower limbs was normal, whereas the upper limbs showed a segmentary phlebitis aspect at the junction of the brachial vein and the axillary vein on the operated side. With curative treatment associating brief oxygen therapy, low-molecular-weight heparin replaced by anti-vitamin K on admission, the follow-up was simple.

The thrombophilic workup, including measurement of protein C and protein S, a search for anti-prothrombinase antibodies, resistance to activated protein C, as well as a mutation of factor V Leiden, was normal (Fig. 2).

Three years after the surgery, the patient presented a Constant score [8] of 88 out of 100. He showed no restric-

tion in range of movement. However, pain persisted, which prevented him from resuming his high-level sports activity.

Discussion

Thromboembolic accidents are rare in upper limb surgery [9]. Their incidence is beginning to be reported in the joint prosthesis literature. Important co-morbidity factors such as a history of thrombophlebitis or the presence of associated cancer at the time of surgery are frequently associated even if the incidence of these episodes remains low (1 to 4% of all the thromboembolic events) [10]. Certain disorders of the upper limb are more frequently associated with thromboembolic problems: thoracic outlet syndrome has a higher incidence of thromboembolic events than other pathologies, although the rate remains very low [11,12].

The use of arthroscopic techniques makes it possible to respect the soft tissues surrounding the joints. Since these techniques are less invasive, one can assume that the surgical acts are less thrombogenic than open surgery. The occurrence of thrombophlebitis of the lower limb in ligament reconstruction is less than 1% [13]. There is no scientific argument for prescribing anticoagulants in any of the elective arthroscopic surgeries of the knee according to the Sfar/Anaes (Société française d'anesthésie et de réanimation/Agence nationale d'accréditation et d'évaluation en santé) [14] and the American College of Clinical Pharmacy (ACCP) [15] guidelines beyond the associated thromboembolic risk factors.

As for arthroscopic surgery of the shoulder, one case of pulmonary embolism complicating phlebitis of the upper limb was published by Polhofer et al. [5]. This 48-year-old patient, operated on for acromioplasty of the shoulder, presented several risk factors for thromboembolism: diabetes, obesity, and a tumoral lesion (enchondroma). This intervention was performed under general anesthesia in the lateral decubitus position with 3 kg of traction in the limb's axis. Paradoxically, the patient had been given preventive low-molecular-weight heparin treatment.

Kuremsky et al. [16] reported a review of 1908 arthroscopy files and identified eight cases of symptomatic thromboembolism complications (0.42%). They noted seven cases of deep vein thrombosis and five cases of pulmonary embolism. No deaths were noted. Only half of the patients had hemostasis factor anomalies (Table 1) (one protein S deficiency, two cases of associated cancers, one patient with a BMI of 35). Although all the thromboses involved the same side, half involved the upper limb and half the lower limb. All these patients had been operated on in the lateral decubitus position. As factors favoring thrombosis, the authors retained the following: the lateral decubitus posi-

Thrombophilic workup necessary with unexplained thrombosis:

- Antithrombin dosage of protein C and protein S
- Activated protein C resistance test and search for R506Q mutation of Factor V Leiden
- Search for G20210A mutation of Factor 2
- Search for antiphospholipid-type antibodies

Figure 2

Table 1 Gene variants associated with deep vein thrombosis [17].

	Prevalence in general population (%)	Prevalence in patients with DVT (%)	Estimated relative risk
Antithrombin, protein C or protein S deficiency	1–2	5–15	5–10
Factor V Leiden mutation	3–10	20	5–10
Factor 2 mutation	1–3	5–10	2–4

DVT: deep vein thrombosis.

tion with traction on the limb in its axis, prolonged surgery, use of interscalene brachial plexus block, risk factors for thrombosis (neoplasm, antithrombotic factor deficiency). The authors did not recommend systematic treatment given the low incidence and did not deem it necessary to worry the patient with a systematic warning of this extremely rare complication. However, the patients fill out a questionnaire to determine whether they present risk factors for thromboembolism.

Today there are no official guidelines on the prophylactic treatment of phlebitis in knee arthroscopy, although the occurrence of these events is on the order of 1% [3,18]. The extremely low incidence of these complications during shoulder arthroscopic procedures should incite the search for a means to screen at-risk subjects so as to prevent these complications.

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